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Border Fences and their Impacts on Large Carnivores, Large Herbivores and Biodiversity: An International Wildlife Law Perspective

Arie Trouwborst,* Floor Fleurke and Jennifer Dubrulle

Fences, walls and other barriers are proliferating along international borders on a global scale. These border fences not only affect people, but can also have unintended but important consequences for wildlife, inter alia by curtailing migrations and other movements, by fragmenting populations and by causing direct mortality, for instance through entanglement. Large carnivores and large herbivores are especially vulnerable to these impacts. This article analyses the various impacts of border fences on wildlife around the world from a law and policy perspective, focusing on international wildlife law in particular. Relevant provisions from a range of global and regional legal instruments are identified and analysed, with special attention for the Bonn Convention on Migratory Species and the European Union Habitats Directive.

INTRODUCTION

The last few decades have witnessed a proliferation of security and other fences along jurisdictional boundaries across the globe, culminating in the recent, hasty construction of border fences by several European countries to stem refugee flows.¹ Besides their intended consequences for people, it is becoming increasingly clear that border fences have unintended consequences for wildlife as well. Such fences can *inter alia* curtail animals' mobility, fragment populations and cause direct mortality. Large carnivores and large herbivores are especially vulnerable to these impacts.

This article analyses the various impacts of border fences on the natural environment from an international wildlife law and policy perspective. First, it highlights and illustrates the surprisingly severe and pervasive impacts of border fences on wildlife around the world. This exercise reveals that, from a wildlife law and policy point of view, border fencing is all but a

marginal issue, despite the scant attention paid to this topic in the scholarly literature so far. Subsequently, the article identifies and discusses a range of relevant international legal instruments, paying attention both to legally binding obligations and their interpretation, and to non-binding guidance. Separate, detailed analyses are devoted to two particularly significant regimes, namely the legal framework of the Bonn Convention on Migratory Species (CMS)² and its subsidiary instruments, and the European Union (EU) Habitats Directive.³ The article's final section contains concluding observations and recommendations.

BORDER FENCING AS A WILDLIFE LAW AND POLICY ISSUE

The construction of barriers along borders is a long-standing practice, from the Great Wall of China and Hadrian's Wall to the present day. Besides the high-profile fences along the United States (US)/Mexico, North/South Korea and Israel/West Bank borders, fences currently separate Malaysia and Thailand, India and Pakistan, Iran and Iraq, China and Mongolia, and Botswana and Zimbabwe, to provide a small sample. Whereas the global amount of border fences briefly stagnated in the years following the fall of the Berlin Wall, the terrorist attacks of 11 September 2001 heralded a stark increase of border fence construction projects that continues to date.⁴ Most recently, hundreds of kilometres of fences were hastily erected along external and internal EU borders to stem refugee flows. A recent estimate puts the total length of border fences in Eurasia alone (not counting the Middle East) in the order of a staggering 30,000 km.⁵

² Convention on the Conservation of Migratory Species of Wild Animals (Bonn, 23 June 1979; in force 1 November 1983) ('CMS').

³ Directive 92/43/EEC of 21 May 1992 on the Conservation of Natural Habitats and of Wild Fauna and Flora, [1992] OJ L206/7.

⁴ E. Vallet (ed.), *Borders, Fences and Walls: State of Insecurity?* (Ashgate, 2014); R. Noack, 'These 14 Walls Continue to Separate the World', *The Washington Post* (11 November 2014).

⁵ J.D.C. Linnell *et al.*, 'Border Security Fencing and Wildlife: The End of the Transboundary Paradigm in Eurasia?', 14:6 *PLOS Biology* (2016), e1002483; see in particular Table 1 and Figure 3.

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¹ The term 'fence' is used in this article in a broad sense, as encompassing fences in a narrow sense as well as walls and other artificial barriers.

International law does not preclude States from constructing border fences on their own territories, save when said construction would under the circumstances violate particular international obligations of the State involved,⁶ for instance under human rights law, migration law or indeed international wildlife law. The latter field is aimed at the conservation of wild flora and fauna, the ecosystems they compose and biodiversity at large. The relevance of this legal discipline to border fences might at first sight seem to be marginal at best. Yet, a recent increase in attention for the impacts of border fences on the natural world in the conservation biology literature warrants a serious examination of the role reserved for international wildlife law in this regard.

Usually, border fences are built to keep people out, such as armed forces, terrorists, drug smugglers, economic migrants and refugees. Sometimes, they are built to keep people *in* as well, as with the Iron Curtain. A fence may, furthermore, be intended to mark a border or to reinforce a territorial claim. Only in exceptional cases have border fences been intended to impede the movement of (wild or domesticated) non-human creatures. Reportedly, in 2008 the authorities of a Chinese district of the Inner Mongolia region erected a 100 km fence along the border with Mongolia in order to stop wolves (*Canis lupus*) from crossing over into China and devouring local livestock.⁷ Likewise, Botswana's primary stated purpose for erecting a 500 km fence along the Zimbabwean border in 2003 was to keep out cattle infected with foot and mouth disease,⁸ repeating prior, smaller-scale veterinary cordon fencing projects along the Namibian border. At any rate, in almost all cases, the impacts of border fences on biodiversity are unintended by-products. These impacts, however unintended, can be significant. Border fences can block or hamper animals' movements and can also injure or kill animals attempting to cross. The various types of impacts are concisely discussed below.

Of course, regular (non-border) fences and other linear infrastructure such as highways, railroads, pipelines, cables and canals, can also hinder or harm wildlife.⁹ For instance, the world's longest fence is not a border fence: the 5,614-km-long Dingo Fence built across Australia in the nineteenth century to protect domestic sheep from predation by dingoes (*Canis dingo*).¹⁰ Besides, many

fences around the globe have been erected expressly for wildlife conservation purposes, for instance to keep poachers outside and animals safely inside of protected areas.¹¹ Nevertheless, the present article focuses exclusively on *border* fences, for various reasons. For highways, railroads and similar infrastructural projects, impacts on biodiversity are often considered as part of the planning process, and mitigated through measures like animal crossing structures or wildlife-friendly fence design. For border fences, things tend to be different. Whereas they, too, may cut through wildlife habitat over huge distances, border fences are *meant* to be impenetrable – for people, to be sure, but as a consequence also for many animals, especially large-bodied ones – and wildlife overpasses are generally incompatible with this purpose. In addition, the construction of border fences tends to be motivated by security concerns that are considered paramount over most other considerations. This means that any potential impacts on wildlife may not be contemplated in decision making, or simply be taken for granted. Thus, national environmental legislation which might impede or delay a border fence's construction may be inapplicable, overruled or just ignored, to the effect that no environmental impact assessment (EIA) or strategic environmental assessment (SEA) is made and protected species legislation is not applied. A striking example is offered by US federal legislation adopted in 2005, which sidelines all environmental laws, such as the Endangered Species Act (ESA), which might interfere with the construction of the Mexican border fence: 'The Secretary of Homeland Security shall have the authority to waive, and shall waive, all laws such Secretary, in such Secretary's sole discretion, determines necessary to ensure expeditious construction of the barriers and roads under this section.'¹²

Added impetus for writing this article was provided by the recent flurry of border fence construction in Europe in response to the influx of refugees from Syria, Iraq and Afghanistan, and other migrants. Early 2016, scientists raised the alarm concerning the consequences of these refugee fences for biodiversity in the journal *Nature*, and subsequently conducted a more comprehensive review of the available knowledge regarding the implications of border fences for wildlife conservation across Eurasia.¹³

⁶ E. Pusterla and F. Piccin, 'The Loss of Sovereignty Control and the Illusion of Building Walls', 27:2 *Journal of Borderlands Studies* (2012), 121.

⁷ 'Fence to Keep Out Hungry Wolves in Inner Mongolia', *China Daily* (26 August 2008).

⁸ R. Carroll, 'Botswana Erects 300-Mile Electrified Fence to Keep Cattle (and Zimbabweans) Out', *The Guardian* (10 September 2003).

⁹ There is a rich literature documenting the impacts of linear infrastructure on wildlife. For one recent review, see J. Wingard *et al.*, *Guidelines for Addressing the Impact of Linear Infrastructure on Large Migratory Mammals in Central Asia* (CMS, 2014).

¹⁰ T.M. Newsome *et al.*, 'Resolving the Value of the Dingo in Ecological Restoration', 23:3 *Restoration Ecology* (2015), 201.

¹¹ M.J. Somers and M.W. Hayward (eds.), *Fencing for Conservation: Restrictions of Evolutionary Potential or Riposte to Threatening Processes?* (Springer, 2012); R. Woodroffe, S. Hedges and S.M. Durant, 'To Fence or Not to Fence', 344:6179 *Science* (2014), 46.

¹² H.R. 418 (109th): Real ID Act of 2005, Section 102; see P. Doyle, 'Unintended Consequences: The Environmental Impact of Border Fencing and Immigration Reform', 3 *Arizona Journal of Environmental Law and Policy* (2014), 1047.

¹³ J.D.C. Linnell *et al.*, 'Border Controls: Refugee Fences Fragment Wildlife', 529:7585 *Nature* (2016), 156; and J.D.C. Linnell *et al.*, n. 5 above. Both publications were co-authored by one of the present authors, and the present article builds on them. See also A. Coghlan and M. Tatalovic, 'Fences Put Up to Stop Refugees in Europe are Killing Animals', *New Scientist* (17 December 2015).

Naturally, the particular features of each border fence determine its permeability and overall consequences for different species of wildlife. These features vary widely. Whereas man-made border walls of ice remain the stuff of fiction for the time being,¹⁴ it seems that most other eligible materials have actually been put to use to solidify boundaries in one way or another. Existing border fences include (combinations of) chain link, barbed or razor wire fences, electrified fences, steel fences, concrete walls, sand walls (e.g., Morocco/Western Sahara), mud walls (e.g., Pakistan/Afghanistan), trenches and even underground metal walls (e.g., Egypt/Gaza Strip). Common accessories include roads, floodlights, human guards, dogs and landmines. Besides its design, the biodiversity impacts of a border fence depend on other variables as well, which obviously include the distribution and characteristics of the species present.

The potential impacts of border fences on wildlife are various.¹⁵ Foremost, border fences impede mobility. Fences can either be literal barriers, when animals are unable to cross or go around them, or functional barriers, when they (due to physical obstacles and/or a deterrent effect of their appearance) reduce the frequency of animal movements, even if some individuals may occasionally get across.¹⁶ Whereas these effects are easily imagined for large mammals like bears or deer, both barrier effects may also affect smaller creatures like reptiles, insects and even birds.¹⁷ This way, border fences fragment habitats, split populations, cause genetic isolation and alter behaviours that may be important to the long-term survival of the populations or species involved.¹⁸ Examples of such behaviours include seasonal migrations, nomadic movements in search of food or water, and the dispersal of adolescent animals from their birth grounds in search of territories and partners of their own. For instance, when migratory or nomadic journeys are cut short by a border fence, the animals involved may weaken or die

through starvation or dehydration. Border fences may thus cause gradual population reductions or even quite sudden mass mortality.¹⁹ Climate change has made the importance of mobility for wildlife all the greater, as the distributions of many species, including sedentary ones, are shifting in response to changing climatic conditions.²⁰ Another way in which border fences may indirectly contribute to increased wildlife mortality is through the ready supply of wire they may offer, which can be turned into snares by poachers.²¹ Poachers may also take advantage of border fences when pursuing animals, by chasing and trapping fast-moving animals against the fence.²² Border fences can even give natural predators an unfair advantage, as animals like African wild dogs (*Lycaon pictus*), wolves and coyotes (*Canis latrans*) can also learn to improve their hunting success by chasing prey into fences.²³ Furthermore, and significantly, border fences may injure or kill animals directly, when they get entangled in barbed or razor wire, get electrocuted or step on landmines.

All in all, border fences can cause declines and even local disappearance of species. Impacts appear to be most severe for large animals, both large carnivores – with their low-density occurrences, huge home ranges and long-distance dispersal – and large herbivores, especially those inclined to traveling far and wide.²⁴ This, in turn, can have further effects rippling through ecosystems, especially given the influential roles of large carnivores and large herbivores in the greater scheme of things.²⁵ Border fences may also influence plant life by affecting processes like seed dispersal and pollination. Indeed, the ancient Great Wall of China appears to have caused notable genetic differences between plant species on either side.²⁶ Incidentally, even if the available literature

¹⁴ For a popular example, see the book series *A Song of Ice and Fire* by fantasy novelist George R.R. Martin and the associated television series *Game of Thrones*.

¹⁵ For readers looking for more comprehensive reading regarding the impacts of border fences on wildlife than the summary provided here, good starting points are M.J. Somers and M.W. Hayward, n. 11 above; J. Wingard *et al.*, n. 9 above; and J.D.C. Linnell *et al.*, n. 5 above. Incidentally, even without fences international borders can exert a considerable influence on biodiversity conservation: see, e.g., M. Dallimer and N. Strange, 'Why Socio-political Borders and Boundaries Matter in Conservation', 30:3 *Trends in Ecology and Evolution* (2015), 132.

¹⁶ H. Sawyer *et al.*, 'A Framework for Understanding Semi-permeable Barrier Effects on Migratory Ungulates', 50:1 *Journal of Applied Ecology* (2013), 68.

¹⁷ For instance, when a border fence and the open spaces on either side of it cut across forest habitat, forest-dwelling birds may be reluctant to cross the unfamiliar open space; see H. Powell, 'Fencing the Border and its Birds' (2015), found at: <<http://www.birds.cornell.edu/page.aspx?pid=1345>>.

¹⁸ See J.D.C. Linnell *et al.*, n. 5 above.

¹⁹ See J. Wingard *et al.*, n. 9 above.

²⁰ See, e.g., A. Campbell *et al.*, *Review of the Literature on the Links between Biodiversity and Climate Change: Impacts, Adaptation and Mitigation* (Secretariat of the Convention on Biological Diversity, 2009); A. Trouwborst, 'International Nature Conservation Law and the Adaptation of Biodiversity to Climate Change: A Mismatch?', 21:3 *Journal of Environmental Law* (2009), 419, at 419–421 and 426–429.

²¹ See R. Woodroffe *et al.*, n. 11 above, at 47.

²² This has been reported, for example, for saiga antelope (*Saiga tatarica*) and argali sheep (*Ovis ammon*) in Central Asia: T. Rosen, *Analyzing Gaps and Options for Enhancing Argali Conservation in Central Asia within the Context of the Convention on the Conservation of Migratory Species of Wild Animals* (CMS, 2012).

²³ H.T. Davies-Mostert, M.G.L. Mills and D.W. Macdonald, 'Hard Boundaries Influence African Wild Dogs' Diet and Prey Selection', 50:6 *Journal of Applied Ecology* (2013), 1358; J. Wingard *et al.*, n. 9 above.

²⁴ See J.D.C. Linnell *et al.*, n. 5 above, especially Table 1.

²⁵ J.A. Estes *et al.*, 'Trophic Downgrading of Planet Earth', 333:6040 *Science* (2011), 301; W.J. Ripple *et al.*, 'Status and Ecological Effects of the World's Largest Carnivores', 343:6167 *Science* (2014), 1241484; W.J. Ripple *et al.*, 'Collapse of the World's Largest Herbivores', 1:4 *Science Advances* (2015), e1400103.

²⁶ H. Su *et al.*, 'The Great Wall of China: A Physical Barrier to Gene Flow?', 90:3 *Heredity* (2003), 212.

clearly suggests that the sum of border fences' impacts on wildlife across the globe is overwhelmingly negative, it should be noted that border fences may occasionally provide unintended benefits for wildlife as well. For instance, the no-entry security zones along fences can provide quiet havens for wildlife, and border fences can prevent animals from roaming into countries with higher levels of poaching – or prevent poachers from roaming into countries with higher levels of wildlife.²⁷

LYNX IN EUROPE, GAZELLES IN ASIA, GIRAFFES IN AFRICA: THE URGENCY AND SCALE OF THE BORDER FENCE PROBLEM

To promote an understanding of the urgent nature, global scale and complexity of the problems posed by border fences to wildlife conservation, and consequently of the role reserved for international wildlife law and policy, some selected examples from different continents are provided here, beginning in Africa. Botswana's veterinary border fences have had adverse consequences for many wild animal populations, including giraffe (*Giraffa camelopardalis*), African elephant (*Loxodonta africana*), steppe zebra (*Equus quagga*) and many species of antelope, both by ensnaring animals and by cutting them off from vital resources.²⁸ Fences erected in 1996 at the Namibian border, along the entire West Caprivi Strip (190 km), pose a clear example, as they closed off crucial migratory routes.²⁹ During a brief inventory in 1997, the following animals were encountered dead along the fence itself, whereby it should be realized that these merely constitute the tip of the iceberg of the fence's overall toll: five giraffes, one elephant, two elands (*Taurotragus oryx*), one roan antelope (*Hippotragus equinus*), one sable antelope (*Hippotragus niger*), five kudus (*Tragelaphus streptoceros*) and several smaller antelope.³⁰

In Asia, border fences have proliferated right across the continent. These fences are a particular concern in Central Asia, which has been dubbed the 'Serengeti of the North',³¹ as it is still home to a range of large migratory and nomadic mammal species. By splitting populations, impeding migrations and killing animals attempting to cross, border fences pose an actual or potential threat to many of these, including the Mongolian gazelle (*Procapra gutturosa*), saiga antelope (*Saiga tatarica*), Asiatic wild ass (*Equus hemionus*, also known as khulan), Bactrian camel (*Camelus ferus*), argali sheep (*Ovis ammon*) and snow leopard (*Panthera uncia*).³² Illustrations include statistics showing the stark impact of the Kazakhstan/Uzbekistan border fence on a transboundary saiga population;³³ GPS data showing that fences along the Mongolian/Chinese border have effectively separated the remaining and dramatically declining herds of Asiatic wild ass into distinct subpopulations on either side of the border;³⁴ and photos of Mongolian gazelles hopelessly caught up in barbed wire during attempts to negotiate a Mongolian/Russian border fence.³⁵ The following example concerns a more surprising way in which border fences can diminish animals' chances of survival. An increase in fatal attacks on people by Asiatic black bears (*Ursus thibetanus*) and leopards (*Panthera pardus*) in the Kashmir region has been linked to the border fence constructed by India along its contested border with Pakistan, which has disrupted the predators' wandering patterns and diminished their access to natural prey, ultimately causing them to enter villages and target humans.³⁶ Needless to say, this situation has increased – and quite understandably so – the likelihood of bears and leopards being killed by local people, whether to prevent further attacks or in retaliation. As for a positive effect of

³¹ T. Rosen Michel and C. Röttger, *Central Asian Mammals Initiative: Saving the Last Migrations* (United Nations Environment Programme (UNEP)/CMS, 2014).

³² K.A. Olson et al., 'Fences Impede Long-Distance Mongolian Gazelle (*Procapra gutturosa*) Movements in Drought-Stricken Landscapes', 7:1–2 *Mongolian Journal of Biological Sciences* (2009), 45; B. Lkhagvasuren, B. Chimeddorj and D. Sanjmyatav, *Barriers to Migration: Case Study in Mongolia – Analysing the Effects of Infrastructure on Migratory Terrestrial Mammals in Mongolia* (UNEP/CMS and WWF, 2011); T. Rosen, n. 22 above; T.Y. Ito et al., 'Fragmentation of the Habitat of Wild Ungulates by Anthropogenic Barriers in Mongolia', 8:2 *PLOS ONE* (2013), e56995; K.A. Olson, *Saiga Crossing Options: Guidelines and Recommendations to Mitigate Barrier Effects of Border Fencing and Railroad Corridors on Saiga Antelope in Kazakhstan* (Smithsonian Conservation Biology Institute, 2014); J. Wingard et al., n. 9 above; E. Bykova, A. Esipov and D. Golovtsov, 'Participatory Monitoring of Saiga Distributions and Poaching in Ustyurt, Uzbekistan', 19 *Saiga News* (2015), 16. The species mentioned in the main text are just a sample from a longer list of affected species mentioned in J.D.C. Linnell et al., n. 5 above, Table 1.

³³ See E. Bykova et al., n. 32 above.

³⁴ See Figure 2 in J.D.C. Linnell et al., n. 5 above, depicting the movements of GPS-tracked wild asses and clearly demonstrating the impenetrability of the fence.

³⁵ See B. Lkhagvasuren et al., n. 32 above, at 11; J. Wingard et al., n. 9 above, at 71.

³⁶ A. Pahalwan, 'Fenced In, Kashmir's Leopards, Bears Stalk Villages', *Environmental News Network* (23 November 2006).

²⁷ See J.D.C. Linnell et al., n. 5 above; and W. de Jong and K. Evans, 'Transnational Natural Resource Governance in Border Regions', in: W. de Jong, D. Snelder and N. Ishikawa (eds.), *Transborder Governance of Forests, Rivers and Seas* (Earthscan, 2010), 4.

²⁸ A. Albertson, *Northern Botswana Veterinary Fences: Critical Ecological Impacts* (Okavango People's Wildlife Trust, 1998); A.B. Anderson and C.N. Jenkins, *Applying Nature's Design: Corridors as a Strategy for Biodiversity Conservation* (Columbia University Press, 2006), at 59–60; J.E. Mbaiwa and O.I. Mbaiwa, 'The Effects of Veterinary Fences on Wildlife Populations in Okavango Delta, Botswana', 12:3 *International Journal of Wilderness* (2006), 17; M.J. Chase and C.R. Griffin, 'Elephants Caught in the Middle: Impacts of War, Fences and People on Elephant Distribution and Abundance in the Caprivi Strip, Namibia', 47:2 *African Journal of Ecology* (2009), 223.

²⁹ Ibid.

³⁰ See A. Albertson, n. 28 above; and J.E. Mbaiwa and O.I. Mbaiwa, n. 28 above, at 21.

border fences, Dorcas gazelle (*Gazella dorcas*) occur in significantly higher numbers in the Israeli part of the transboundary Arava Desert than in the Jordanian part. Researchers attribute this to a combined effect of the border fence and more effective legal protection in Israel.³⁷ The mixed effects of some border fences are particularly well illustrated with reference to yet another gazelle from the region. Conservationists have been struggling to determine whether the various border security fences constructed along Israel's borders are a good or a bad thing for the endangered Israeli gazelle (*Gazella gazella*). To be sure, the barriers impede the animals' cross-border mobility, degrade its habitat and fragment its populations further.³⁸ Nonetheless, these adverse impacts are overshadowed by the safety the barriers offer the gazelles from their gravest threat, namely death at the hands of Palestinian hunters.³⁹ As most surviving gazelles remain on Israeli territory, the species' advocates would actually welcome the closing of remaining gaps in the West Bank separation barrier.⁴⁰

In Europe, the security fences that have stood along the western borders of the Russian Federation and Belarus for decades have apparently left their marks on populations of wolf, brown bear (*Ursus arctos*), Eurasian lynx (*Lynx lynx*) and European bison (*Bison bonasus*) in the region, primarily through fragmentation.⁴¹ In Central Europe, since the Iron Curtain was taken down a quarter of a century ago, wolves and other large carnivores have found their way across the old fence lines again. However, the Iron Curtain also serves as a reminder that the effects of border fences can linger for generations, not only for humans but for animals as well. As a recent GPS-tracking study of red deer (*Cervus elaphus*) living on both sides of the border between Germany and the Czech Republic demonstrates, a stunning 25 years after the complete removal of the electrified border fences, the deer still do not cross the boundary.⁴² This is particularly fascinating when realizing that none of the deer alive today have ever

seen the fence, as red deer do not tend to live beyond 15 years. Mother deer apparently still teach their fawns that the old fence line is a no-go area.⁴³ Meanwhile, the brand new razor wire fences erected by Slovenia along the Croatian border create fresh challenges. Significantly, they bisect the transboundary Dinaric-Balkan populations of wolf, lynx and brown bear.⁴⁴ Besides, dead deer have been found entangled and badly damaged in the same fences' coiled wires, amidst evidence of prolonged struggles, the rather gruesome images of which have caused a public outcry.⁴⁵

Ample footage, to end with the pre-eminent American example, is also available of all manner of creatures – including cougars (*Puma concolor*), mule deer (*Odocoileus hemionus*), roadrunners (*Geococcyx californianus*), snakes, lizards and frogs – which have been stopped in their tracks by the US/Mexico fence.⁴⁶ This border fence is believed to prejudice myriad other species besides, such as the fragile jaguar (*Panthera onca*) population in the region.⁴⁷

PREVENTION, MITIGATION AND THE TRANSBOUNDARY PARADIGM

To summarize, border fences can have an array of impacts on wild fauna and flora, at individual, demographic and genetic levels, and ultimately on ecosystems and overall biodiversity. This state of affairs places the border fence topic squarely within the field of wildlife law and policy. For instance, according to the strategic 'Aichi Targets' adopted by the parties to the Convention on Biological Diversity (CBD),⁴⁸ by 2020 the 'degradation and fragmentation' of natural habitats must have been 'significantly reduced', and the conservation status of threatened species improved.⁴⁹ Moreover, the urgent need to address the adverse impacts of international border fences on wildlife conservation, as

³⁷ J. Keating, 'Gerbils with Borders', *Foreign Policy – Passport Blog* (20 November 2009).

³⁸ V. O'Brien, 'Israeli Army Opens West Bank Barrier for Animals', *Deutsche Welle* (2 November 2012).

³⁹ In fact, the only gazelle population which has increased of late is in the Gilboa area, where the border fence has kept Palestinian poachers at bay: Z. Rinat, 'Israel's Nature Authority Calls for Harsher Penalties for Gazelle Hunters', *Haaretz* (4 September 2015).

⁴⁰ Personal communication with R. Adam (8 April 2016), author of R. Adam, 'Finding Safe Passage through a Wave of Extinctions: Israel's Endangered Mountain Gazelle', 19:2 *Journal of International Wildlife Law and Policy* (2016), 136.

⁴¹ J. Aspi *et al.*, 'Genetic Structure of the Northwestern Russian Wolf Populations and Gene Flow between Russia and Finland', 10:4 *Conservation Genetics* (2009), 815; R. Kowalczyk, K. Schmidt and W. Jedrzejewski, 'Do Fences or Humans Inhibit the Movements of Large Mammals in Bialowieza Primeval Forest?', in: M.J. Somers and M.W. Hayward, n. 11 above, 235; A. Kopatz *et al.*, 'Admixture and Gene Flow from Russia in the Recovering Northern European Brown Bear (*Ursus arctos*)', 9:5 *PLOS ONE* (2014), e97558.

⁴² 'Czech Deer Still Avoid Iron Curtain', *BBC News* (23 April 2014).

⁴³ Ibid.

⁴⁴ See J.D.C. Linnell *et al.*, n. 5 above, Box 1; T. Heap, 'Costing the Earth – Beasts of the Border', *BBC Radio 4* (29 March 2016), found at: <<http://www.bbc.co.uk/programmes/b074x9gm>>.

⁴⁵ J.D.C. Linnell *et al.*, n. 5 above, Early April 2016, the overall casualty count stood at 17 red deer and one roe deer (*Capreolus capreolus*); personal communication with University of Zagreb biologist S. Reljic (6 April 2016).

⁴⁶ See the Sierra Club documentary *Wild Versus Wall* (2010), found at: <<http://vault.sierraclub.org/borderlands/film.aspx>>; see also the Northern Jaguar Project's photo gallery, found at: <<http://www.northernjaguarproject.org/photo-gallery/border-wall>>.

⁴⁷ J.R. Lasky, W. Jetz and T.H. Keitt, 'Conservation Biogeography of the US–Mexico Border: A Transcontinental Risk Assessment of Barriers to Animal Dispersal', 17:4 *Diversity and Distributions* (2011), 673; H. Hebert, 'US Jaguar Plan Foiled by Border Fence, Critics Say', *National Geographic* (18 January 2008).

⁴⁸ Convention on Biological Diversity (Rio de Janeiro, 5 June 1992; in force 29 December 1993).

⁴⁹ Aichi Biodiversity Targets, found in: CBD, Decision X/2, Strategic Plan for Biodiversity 2011–2020 (UN Doc. UNEP/CBD/COP/DEC/X/2, 29 October 2010), Targets 5 and 12.

reviewed above, is a textbook example where trans-boundary, intergovernmental cooperation is of the essence. Hitherto, however, the wildlife dimension of border fences has hardly received any attention in international law scholarship,⁵⁰ in contrast with the implications of such fences in terms of humanitarian law, human rights, migration law and the law of territory, which have been more extensively addressed in the scholarly literature,⁵¹ and even by the International Court of Justice.⁵² As indicated above, the present article is intended as a contribution to filling this gap. Incidentally, whereas the focus of this article is on wildlife conservation – concerned with the fate of populations, species and ecosystems rather than individual animals – it should be noted that border fences clearly raise distinct animal welfare issues as well.

It is important to note that, depending on the circumstances, some of the adverse impacts of border fences can in principle be prevented, eliminated or mitigated. A striking example is the incidental, temporary removal of some sections of border fence in Central Asia to enable seasonal migratory movements of Mongolian gazelle and saiga antelope herds.⁵³ Another instance concerns the aforementioned Botswana/Namibia Caprivi veterinary fence, as a 30-km stretch of it was eventually removed in order to restore the most critical portion of the affected wildlife corridor.⁵⁴ Besides such

temporary or partial fence removal, potential mitigation measures include animal-friendly fence design;⁵⁵ careful planning of fence routing in the landscape; the compensation of inaccessible resources by providing, for instance, for artificial waterholes; the creation of wildlife crossing structures where compatible with security requirements; the adjustment of species conservation and management plans to reflect the population isolation caused by fences; and the translocation of individuals as a form of assisted dispersal to counter genetic fragmentation.⁵⁶ Generally speaking, conducting an EIA when border fence construction is contemplated would evidently be conducive to the prevention and mitigation of unwanted impacts on wildlife. By way of a final illustration, court rulings against the Israeli Ministry of Defence concerning the wildlife impacts of the West Bank barrier's construction have recently led to the implementation of mitigation measures such as special underpasses for small animals.⁵⁷ Evidently, a potentially crucial role is reserved for law in the present context, as it can require and/or facilitate any such preventive and mitigation measures.

In the main, many international legal instruments – in their binding provisions and/or in subsequent decisions adopted by their parties – emphasize the need to prevent and mitigate the fragmentation of wildlife populations and habitats and to ensure the maintenance or restoration of adequate connectivity, for instance through well-connected protected area networks extending across international frontiers.⁵⁸ Correspondingly, States have increasingly embraced the notion of shared responsibility for the conservation of transboundary natural areas and species,⁵⁹ including through joint site designation under treaties like the Ramsar Wetlands Convention⁶⁰ and the UNESCO World Heritage Convention;⁶¹ through the designation of Trans-frontier Conservation Areas (TFCAs) within the context of the Southern African Development

⁵⁰ There is some *national* law literature regarding border fences: e.g., P. Doyle, n. 12 above. The *international* law implications of habitat fragmentation, including with regard to linear infrastructure are addressed in a general sense in A. Trouwborst, 'Countering Fragmentation of Habitats under International Wildlife Regimes', in: M.J. Bowman, P.G.G. Davies and E.J. Goodwin (eds.), *Research Handbook on Biodiversity and Law* (Edward Elgar, 2016), 219. Finally, J.D.C. Linnell *et al.*, n. 5 above, do highlight the international law dimension of border fences in particular, but only briefly.

⁵¹ See, e.g., S. Akram and M. Lynk, 'The Wall and the Law: A Tale of Two Judgments', 24:1 *Netherlands Quarterly of Human Rights* (2006), 61; D. Gilman, 'Seeking Breaches in the Wall: An International Human Rights Law Challenge to the Texas–Mexico Border Wall', 46:2 *Texas International Law Journal* (2011), 257; S. Lavorel, 'Walls and Access to Natural Resources', in: E. Vallet, n. 4 above, 159; C. Schupfer, 'Hungary's Hope-Crushing Border Fence and the Right to Seek Asylum', *UHRSN Blog* (22 September 2015), found at: <<http://www.uhrsn.org/2015/09/hungarys-hope-crushing-border-fence-and-the-right-to-seek-asylum>>; B.N. Ghráinne, 'Hungary's Actions: Past the Borderline of International Law', *Border Criminologies Blog* (5 October 2015), found at: <<http://www.law.ox.ac.uk/research-subject-groups/centre-criminology/centreborder-criminologies/blog/2015/10/hungary%E2%80%99s-actions>>.

⁵² ICJ 9 July 2004, *Legal Consequences of the Construction of a Wall in the Occupied Palestinian Territory* (Advisory Opinion), [2004] ICJ Rep. 136.

⁵³ See K.A. Olson *et al.*, n. 32 above; K.A. Olson, n. 32 above.

⁵⁴ See A.B. Anderson and C.N. Jenkins, n. 28 above, at 59–60. Another example is the removal of some fences along the South Africa/Botswana and South Africa/Zimbabwe borders in the context of the Greater Mapungubwe Transfrontier Conservation Area, allowing elephants access to South Africa again: S.A.J. Selier *et al.*, 'The Legal Challenges of Transboundary Wildlife Management at the Population Level: The Case of a Trilateral Elephant Population in Southern Africa', 19:2 *Journal of International Wildlife Law and Policy* (2016), 101.

⁵⁵ A border fence between Kazakhstan and Uzbekistan has been specially designed to enable saiga antelope to travel between the two countries; see K.A. Olson, n. 32 above.

⁵⁶ J.D.C. Linnell *et al.*, n. 5 above, Table 2; see also the detailed guidelines in J. Wingard *et al.*, n. 9 above.

⁵⁷ See V. O'Brien, n. 38 above.

⁵⁸ For general analyses in this regard, see B. Lausche *et al.*, *The Legal Aspects of Connectivity Conservation – A Concept Paper* (IUCN, 2013); and A. Trouwborst, n. 50 above.

⁵⁹ A. Trouwborst, 'The Practice of Shared Responsibility in Relation to Nature Conservation', in: P.A. Nollkaemper and I. Plakokefalos (eds.), *The Practice of Shared Responsibility* (Cambridge University Press, 2016, forthcoming).

⁶⁰ Convention on Wetlands of International Importance Especially as Waterfowl Habitat (Ramsar, 2 February 1971; in force 21 December 1975).

⁶¹ Convention Concerning the Protection of the World Cultural and Natural Heritage (Paris, 16 November 1972; in force 17 December 1975) ('World Heritage Convention').

Community (SADC);⁶² and through similar initiatives around the world.⁶³ Likewise, transboundary population-level management has been gaining acceptance, including in the context of international legal instruments,⁶⁴ as an overarching conservation paradigm for wildlife (sub)populations shared by several countries – such as large carnivores in Europe⁶⁵ and elephants in southern Africa⁶⁶ – so as to adjust the planning and implementation of conservation and management measures to the contours of transboundary animal (sub)populations rather than national jurisdictions. The recent worldwide increase in border fencing has put a huge spanner in the works of many transboundary conservation efforts. As noted by Linnell *et al.*, it is ‘somewhat ironic’ that during the last 15 years or so, while transboundary conservation paradigms were taking centre stage in wildlife law and policy, the ‘global trend has been for an unprecedented increase in the unintended prevention of wildlife from moving across borders’.⁶⁷

A GLOBAL INVENTORY OF INTERNATIONAL WILDLIFE LAW OBLIGATIONS VIS-À-VIS BORDER FENCES

At any rate, numerous obligations under environmental agreements are of apparent relevance to the effects of border fences on wildlife conservation. The same is true of the international customary law obligation of all States to ‘ensure that activities within their jurisdiction and control respect the environment of other States’.⁶⁸ Below, a global (but not necessarily exhaustive) list is provided of binding provisions in global and regional legal instruments which, depending on the

circumstances, may be infringed through the construction of border fences:

- Ramsar Wetlands Convention – Articles 3 and 5
- World Heritage Convention – Articles 4, 5 and 6
- Convention on Migratory Species – Articles II and III
- Convention on Biological Diversity – Articles 3, 6, 8 and 14
- African Nature Conservation Convention⁶⁹ – Articles II, VII, VIII, XIV and XVI
- SADC Protocol on Wildlife Conservation⁷⁰ – Articles 3 and 7
- Gorilla Agreement⁷¹ – Articles II and III
- Gulf Nature Conservation Convention⁷² – Articles 1, 2 and 3
- Bern Convention on European Wildlife⁷³ – Articles 2, 3 and 4
- Aarhus Convention⁷⁴ – Articles 1 and 3 through 9
- Espoo Transboundary EIA Convention⁷⁵ – Article 2
- Kiev SEA Protocol⁷⁶ – Articles 3 through 13
- EU SEA Directive⁷⁷ – Articles 3 through 10
- EU Habitats Directive – Articles 6 and 12
- Alpine Biodiversity Protocol⁷⁸ – Articles 2, 3, 4, 9, 11, 12, 14 and 15
- Carpathian Biodiversity Protocol⁷⁹ – Articles 1, 5, 9, 12, 16, 17 and 22
- Central American Biodiversity Convention⁸⁰ – Articles 3 and 10.

⁶⁹ African Convention on the Conservation of Nature and Natural Resources (Algiers, 15 September 1968; in force 16 June 1969); see also Articles X, XII, XIII, XIV and XXII of the revised African Convention on the Conservation of Nature and Natural Resources (Maputo, 11 July 2003; not yet in force).

⁷⁰ SADC Protocol on Wildlife Conservation and Law Enforcement, n. 64 above.

⁷¹ Agreement on the Conservation of Gorillas and their Habitats (Paris, 26 October 2007; in force 1 June 2008).

⁷² Convention on the Conservation of Wildlife and their Natural Habitats in the Countries of the Gulf Cooperation Council (Muscat, 30 December 2001; in force April 2003).

⁷³ Convention on the Conservation of European Wildlife and Natural Habitats (Bern, 19 September 1979; in force 1 June 1982).

⁷⁴ Convention on Access to Information, Public Participation and Access to Justice in Environmental Matters (Aarhus, 25 June 1998; in force 30 October 2001).

⁷⁵ Convention on Environmental Impact Assessment in a Transboundary Context (Espoo, 25 February 1991; in force 10 September 1997).

⁷⁶ Protocol on Strategic Environmental Assessment (Kiev, 21 May 2003; in force 11 July 2010) (‘Kiev SEA Protocol’).

⁷⁷ Directive 2001/42/EC of 27 June 2001 on the Assessment of the Effects of Certain Plans and Programmes on the Environment, [2001] OJ L197/30.

⁷⁸ Protocol on the Implementation of the Alpine Convention of 1991 Relating to the Conservation of Nature and the Countryside (Chambéry, 20 December 1994; in force 18 December 2002).

⁷⁹ Protocol on Conservation and Sustainable Use of Biological and Landscape Diversity to the Framework Convention on the Protection and Sustainable Development of the Carpathians (Kiev, 22 May 2003; in force 28 April 2010) (‘Carpathian Biodiversity Protocol’).

⁸⁰ Convention for the Conservation of the Biodiversity and the Protection of Wilderness Areas in Central America (Managua, 5 June 1992; in force 20 December 1994).

⁶² W.D. Lubbe, ‘A Legal Appraisal of the SADC Normative Framework Related to Biodiversity Conservation in Transfrontier Conservation Areas’, in: L.J. Kotzé and T. Marauhn (eds.), *Transboundary Governance of Biodiversity* (Brill/Nijhoff, 2014), 204.

⁶³ M. Vasiljević *et al.*, *Transboundary Conservation: A Systematic and Integrated Approach* (IUCN, 2015).

⁶⁴ J.D.C. Linnell, V. Salvatori and L. Boitani, *Guidelines for Population Level Management Plans for Large Carnivores in Europe* (European Commission, 2008); Bern Convention Standing Committee Recommendation No. 137 (2008) on Population Level Management of Large Carnivore Populations (27 November 2008); see also SADC Protocol on Wildlife Conservation and Law Enforcement (Maputo, 18 August 1999; in force 30 November 2003), Article 3.2.

⁶⁵ J.D.C. Linnell and L. Boitani, ‘Building Biological Realism into Wolf Management Policy: The Development of the Population Approach in Europe’, 23:1 *Hystrix* (2012), 80; A. Trouwborst, ‘Global Large Carnivore Conservation and International Law’, 24:7 *Biodiversity and Conservation* (2015), 1567, at 1582–1584; J.S.V. Dubrulle, ‘Legal Efforts to Achieve Optimal Transboundary Population Level Management’, *Tilburg Law School Environmental Law Blog* (8 September 2015), found at: <<http://blog.uvt.nl/environmentallaw/?p=118>>.

⁶⁶ See S.A.J. Selier *et al.*, n. 54 above.

⁶⁷ See J.D.C. Linnell *et al.*, n. 5 above.

⁶⁸ ICJ 8 July 1996, *Legality of the Threat or Use of Nuclear Weapons* (Advisory Opinion), [1996] ICJ Rep. 226, at paragraph 29.

Reproducing and analysing all of these provisions is beyond the scope of the present article. Whereas two particularly significant regimes – the CMS and the Habitats Directive – are addressed in some detail in subsequent sections, a few selected examples from other instruments are given here to illustrate the diversity of pertinent provisions. Each party to the World Heritage Convention is expected to ‘ensure that effective and active measures are taken for the protection, conservation and presentation’ of the natural heritage situated on its own territory;⁸¹ and also to refrain from ‘any deliberate measures which might damage directly or indirectly’ the natural heritage ‘situated on the territory of other States Parties’.⁸² Parties to the SADC Protocol on Wildlife Conservation shall, *inter alia*, ‘cooperate with other Member States to manage shared wildlife resources as well as any transfrontier effects of activities within their jurisdiction or control’.⁸³ Border fences may be equally problematic, to provide a final instance, in light of the following provisions in the Carpathian Biodiversity Protocol:

Each Party shall take measures in its national territory with the objective to improve and ensure continuity and connectivity of natural and semi-natural habitats in the Carpathians, thus allowing dispersal and migration of wild species populations particularly of large carnivores, and genetic exchange between such populations.⁸⁴

In a case where the natural habitat of the endangered species is located on both sides of the state border between the Parties, such concerned Parties shall cooperate on ensuring the conservation and, as may be necessary, recovery of those species and their natural habitats.⁸⁵

Whether constructing or retaining a particular fence is at odds with any of the international obligations laid down in the listed provisions or elsewhere depends on a range of variables. These include whether the country or countries involved are bound by relevant legal instruments in the first place; the extent to which (potentially) affected species or sites are covered by these instruments; the phrasing of the specific provisions involved; and the particular features of the fence in question and its (expected) impacts.⁸⁶

It should be borne in mind that the provisions in question ought to be interpreted in light of the treaties’

overall objectives and relevant subsequent decisions by the parties.⁸⁷ Thus, to illustrate, in a case involving border fencing, the interpretation of the listed provisions of the Alpine Biodiversity Protocol is informed by the subsequently recorded resolve of contracting parties to ‘preserve and restore wildlife as wildlife to the extent possible by assuring their free movement in space and time’; and to ‘preserve and connect wildlife habitats and ensure the permeability of the landscape’.⁸⁸ Likewise, the indicated provisions of the Bern Convention must be understood and applied in view of relevant guidance recorded in the Recommendations adopted over the years by the Convention’s Standing Committee. One of these commits parties to the following course of action:

Taking measures to restore or to compensate for the loss of ecological corridors caused by the building of new roads and other constructions that prevent animals from migrating or interchanging. In these cases, the responsible authority has to safeguard such crossing routes, for example, by building special tunnels for otters and badgers, by building so-called cerviducts for deer, ... or by any other appropriate means.⁸⁹

Special attention should also be paid to the existence and applicability of exception clauses in legal instruments, and to any reservations that may have been submitted by the State(s) involved. Regarding the former, the Kiev SEA Protocol provides that plans and programmes ‘whose sole purpose is to serve national defence or civil emergencies’ are ‘not subject to this Protocol’.⁹⁰ The 1968 African Nature Conservation Convention offers another example by stating that the ‘provisions of this Convention shall not affect the responsibilities of Contracting States concerning i) the paramount interest of the State, ii) “force majeure”, iii) defence of human life’.⁹¹ Evidently, the question may also arise whether any circumstances precluding wrongfulness might apply under general international law – for instance, whether the erection of a particular border fence in breach of a treaty obligation can be said

⁸¹ World Heritage Convention, n. 61 above, Article 5.

⁸² *Ibid.*, Article 6.3.

⁸³ SADC Protocol on Wildlife Conservation and Law Enforcement, n. 64 above, Article 3.2.

⁸⁴ Carpathian Biodiversity Protocol, n. 79 above, Article 9.1.

⁸⁵ *Ibid.*, Article 16.3.

⁸⁶ For large carnivores, any such exercises may be aided by a recent review detailing the legal status of each of the world’s 30-plus largest terrestrial carnivore species under global and regional wildlife instruments; see A. Trouwborst, n. 65 above.

⁸⁷ Vienna Convention on the Law of Treaties (Vienna, 22 May 1969; in force 27 January 1980), Article 31. Regarding the latter category, decisions adopted by Conferences of the Parties (COPs) or similar treaty bodies, although usually not themselves legally binding, can be of significant interpretive value as regards the treaties’ binding provisions; see, e.g., A. Wiersema, ‘The New International Law-Makers? Conferences of the Parties to Multilateral Environmental Agreements’, 31:1 *Michigan Journal of International Law* (2009), 231; M. Bowman, P. Davies and C. Redgwell, *Lyster’s International Wildlife Law*, 2nd edn (Cambridge University Press, 2010), 46; A. Trouwborst, ‘Conserving European Biodiversity in a Changing Climate: The Bern Convention, the European Union Birds and Habitats Directives and the Adaptation of Nature to Climate Change’, 20:1 *Review of European Community and International Environmental Law* (2011), 62, at 66–67.

⁸⁸ Guidelines on Large Carnivores, Wild Ungulates and Society (adopted by XIth Alpine Conference on 9 March 2011), at paragraphs 2.1 and 3.2.

⁸⁹ Standing Committee Recommendation No. 25 (1991) on the Conservation of Natural Areas Outside Protected Areas Proper (6 December 1991), Appendix, Part III (emphasis added).

⁹⁰ Kiev SEA Protocol, n. 76 above, Article 4.5(a).

⁹¹ African Convention on the Conservation of Nature and Natural Resources, n. 69 above, Article XVII.1.

to constitute ‘the only way for the State to safeguard an essential interest against a grave and imminent peril’ and also meets the other conditions to qualify as a ‘necessity’ in the sense of the international law of State responsibility.⁹²

BORDER FENCES AND THE CONVENTION ON MIGRATORY SPECIES

The CMS and its subsidiary instruments and arrangements are of evident significance for present purposes. Regarding the Bonn Convention itself, many crucial range States of species (potentially) affected by border fences are amongst the Convention’s current 123 contracting parties. Although notable absentees include the world’s largest countries,⁹³ most States in Africa, the Middle East, Central Asia, Europe and South America are CMS parties. The Convention’s most relevant provisions are in Article III. These apply exclusively to animals from Appendix I, which lists ‘migratory species which are endangered’. A broad and flexible interpretation of the term ‘migratory’ by CMS parties has enabled the inclusion in Appendix I of various species and subspecies whose populations transcend international boundaries but lack migratory behaviour in the classical sense.⁹⁴ Presently, Appendix I lists around 20 (sub)species that are, or could be, affected by current or future border fences. These include the large carnivores snow leopard and cheetah (*Acinonyx jubatus*); four Asian large herbivores, namely wild yak (*Bos grunniens*), kouprey (*Bos sauveli*), Bukhara deer (*Cervus elaphus yarkandensis*) and the aforementioned Bactrian camel; a range of gazelles and other ungulates from North Africa and the Middle East;⁹⁵ all four subspecies of gorilla;⁹⁶ the Grevy’s zebra (*Equus grevyi*), native to Eastern Africa; and two South American ungulates.⁹⁷ It should be noted

that most, but not all range States of the various aforementioned (sub)species are currently parties to the CMS.

According to Article III.4 of the CMS, parties that are range States of an Appendix I species ‘shall endeavour’ *inter alia* to ‘prevent, remove, compensate for or minimize, as appropriate, the adverse effects of activities or obstacles that seriously impede or prevent the migration of the species’.⁹⁸ Whilst of clear relevance to the border fence issue, the use of the word ‘endeavour’ appears to afford a margin of discretion to the party concerned, making this an obligation of effort rather than result.⁹⁹ The erection of a border fence affecting Appendix I wildlife would therefore not necessarily in all circumstances constitute a violation of Article III.4.

By contrast, the obligation in Article III.5, concerning the ‘taking’ of Appendix I animals, does not afford parties any discretion whatsoever:¹⁰⁰

Parties that are Range States of a migratory species listed in Appendix I shall prohibit the taking of animals belonging to such species. Exceptions may be made to this prohibition only if:

- (a) the taking is for scientific purposes;
- (b) the taking is for the purpose of enhancing the propagation or survival of the affected species;
- (c) the taking is to accommodate the needs of traditional subsistence users of such species; or
- (d) extraordinary circumstances so require;

provided that such exceptions are precise as to content and limited in space and time. Such taking should not operate to the disadvantage of the species.¹⁰¹

Parties must report any such exceptions as soon as possible to the CMS Secretariat.¹⁰² ‘Taking’ is defined as ‘taking, hunting, fishing, capturing, harassing, deliberate killing, or attempting to engage in any such conduct’.¹⁰³ As others have rightly observed, this definition has a ‘very wide scope indeed’¹⁰⁴ and can have ‘far-reaching implications for parties’.¹⁰⁵ Notably, whereas ‘killing’ must be intentional to be covered by Article III.5, the ‘taking’, ‘capturing’ and ‘harassing’ of Appendix I wildlife are within the scope of the

⁹² International Law Commission, Draft Articles on Responsibility of States for Internationally Wrongful Acts (UN Doc. A/56/10, 10 August 2001), Article 25.

⁹³ Non-parties include the Russian Federation, China, Canada and the US, as well as Botswana, Namibia, Mexico and virtually all States in Southeast Asia.

⁹⁴ See M. Bowman *et al.*, n. 87 above, at 538–541; A. Trouwborst, ‘Transboundary Wildlife Conservation in a Changing Climate: Adaptation of the Bonn Convention on Migratory Species and its Daughter Instruments to Climate Change’, 4:3 *Diversity* (2012), 258, at 287–288; A. Trouwborst, n. 65 above, at 1577.

⁹⁵ Addax (*Addax nasomaculatus*); red-fronted gazelle (*Eudorcas rufifrons*); Cuvier’s gazelle (*Gazella cuvieri*); Dorcas gazelle; slender-horned gazelle (*Gazella leptoceros*); Dama gazelle (*Nanger dama*); Barbary deer (*Cervus elaphus barbarus*).

⁹⁶ Western lowland gorilla (*Gorilla gorilla gorilla*); Cross River gorilla (*Gorilla gorilla diehli*); mountain gorilla (*Gorilla beringei beringei*); eastern lowland gorilla (*Gorilla beringei graueri*).

⁹⁷ South Andean huemul (*Hippocamelus bisulcus*); vicugna (*Vicugna vicugna*).

⁹⁸ CMS, n. 2 above, Article III.4(b).

⁹⁹ S. Lyster, ‘The Convention on the Conservation of Migratory Species of Wild Animals (The “Bonn Convention”)', 29:4 *Natural Resources Journal* (1989), 979, at 987; R. Caddell, ‘International Law and the Protection of Migratory Wildlife: An Appraisal of Twenty-Five Years of the Bonn Convention’, 16:1 *Colorado Journal of International Environmental Law and Policy* (2005), 113, at 116–117.

¹⁰⁰ See S. Lyster, n. 99 above, at 987–988; in the words of M. Bowman *et al.*, n. 87 above, at 547, this provision imposes a ‘clear and unequivocal obligation on range states to prohibit the “taking” of animals belonging to Appendix I species’.

¹⁰¹ CMS, n. 2 above, Article III.5.

¹⁰² *Ibid.*, Article III.7.

¹⁰³ *Ibid.*, Article I.1(i).

¹⁰⁴ See M. Bowman *et al.*, n. 87 above, at 548.

¹⁰⁵ See S. Lyster, n. 99 above, at 988.

obligation in Article III.5 even when they are *unintentional*.¹⁰⁶ This is where border fences enter the picture. It is instructive in this regard to consider an example given by Simon Lyster, concerning the incidental capture of Atlantic ridley turtles (*Lepidochelys kempii*) – an Appendix I species – in shrimp fishing nets, which constitutes a significant threat to the species:

Since the entanglement of turtles in the trawls clearly constitutes ‘capturing’ or ‘harassing’, even if the killing of turtles is deemed not to be ‘deliberate’, it is probably fair to conclude that Article III(5) imposes a legal duty on parties that are Range States of the Atlantic ridley to prohibit the use of shrimp trawls in areas where the turtle occurs unless the trawls are fitted with ‘Turtle Excluder Devices’.¹⁰⁷

By analogy, if it can be reasonably foreseen that the construction of a particular border fence may lead to Appendix I wildlife becoming entangled or otherwise ‘taken’ by the fence, or if an existing border fence is taking such toll, then the construction or maintenance of such fence would seem to be incompatible with the obligations of the contracting party involved under Article III.5 of the CMS. Moreover, even if a fence does not lead to ‘capture’ or physical injury of any kind, it would still be at odds with Article III.5 if its effects on Appendix I animals constitute ‘harassing’. The US ESA provides an interesting parallel, as it also includes ‘harass’ in its definition of ‘take’, and defines the former as an act or omission that creates the likelihood of affecting wildlife by ‘annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding or sheltering’.¹⁰⁸ This is understood to include the annoying effects of persistent noise, light or motion, but not so much the physical modification of habitat, which latter is covered by different terms.¹⁰⁹ Regarding the CMS, in the absence of concrete guidance it is hard to say to what degree a border fence may result in the ‘harassing’ of Appendix I wildlife, although a case can clearly be made that the term covers the annoying effects of fence attributes like floodlights and patrolling vehicles, and perhaps also the stress caused to an animal when it finds the fence blocking its intended movement in search of water, food or a mate.

As regards the exceptions that Article III.5 allows from the required prohibition to take Appendix I wildlife, quoted above, reasons (a), (b) and (c) are unlikely to arise in connection with a border fence – except perhaps reason (b) in a rare scenario where the fence expressly serves to *protect* an Appendix I species, for instance, by keeping foreign poachers out. It may, however, obviously be possible for a contracting party to argue under (d) that the erection of a particular border fence is required by ‘extraordinary circumstances’. Parties would seem to have quite a degree of discretion in this regard.¹¹⁰

The requirement that an exception from the prohibition to ‘take’ Appendix I animals must be ‘precise as to content’,¹¹¹ is evidently more problematic, as it will be virtually impossible to predict with any degree of precision what toll a border fence will be taking – for instance, what number of animals it will affect, and how. Next, in cases where a border fence can as such be considered to violate the prohibition of Article III.5, the condition that exceptions must be ‘limited in time’ entails that the party involved cannot justify the building of a *permanent* fence. Lastly, the fence in question should generally ‘not operate to the disadvantage of the species’, although it is unclear what this implies precisely.¹¹²

Various resolutions adopted by the Conference of the Parties (COP) of the CMS are of relevance to the border fence issue. For instance, the COP has requested contracting parties to conduct an EIA or SEA for potentially harmful projects and plans, including assessment of any ‘effects involving impediments to migration’ and any ‘transboundary effects on migratory species’.¹¹³ The COP has also urged parties to cooperate over transboundary areas, ‘ensuring that barriers to migration are to the greatest possible extent eliminated or mitigated’.¹¹⁴ In the context of climate change, another resolution calls on parties to ‘strengthen the physical and ecological connectivity between sites, permitting dispersal and colonization when species distributions shift’.¹¹⁵ Furthermore, a resolution on the impact of power lines on migratory birds provides for interesting parallels with the impacts of border fences on migratory wildlife.¹¹⁶

¹⁰⁶ Ibid.; A. Trouwborst, ‘Aussie Jaws and International Laws: The Australian Shark Cull and the Convention on Migratory Species’, 2 *Cornell International Law Journal Online* (2014), 41, at 42; and E.J. Goodwin, ‘Threatened Species and Vulnerable Marine Ecosystems’, in: D.R. Rothwell et al. (eds.), *The Oxford Handbook of the Law of the Sea* (Oxford University Press, 2015), 799, at 821.

¹⁰⁷ See S. Lyster, n. 99 above, at 988; on bycatch and the CMS generally, see S.J. Bache and S. Rajkumar, ‘Marine Wildlife Bycatch under the CMS: Progress and Prospects’, 18:2 *International Journal of Marine and Coastal Law* (2003), 215.

¹⁰⁸ Fish and Wildlife Service Regulations (1993), 50 CFR at Section 17.3.

¹⁰⁹ S.P. Quarles and T.R. Lundquist, ‘Land Use Activities and the Section 9 Take Prohibition’, in: D.C. Baur and W.R. Irvin (eds.), *Endangered Species Act: Law, Policy, and Perspectives*, 2nd edn (American Bar Association, 2010), 160, at 166–167.

¹¹⁰ See also A. Trouwborst, n. 106 above, at 42–43.

¹¹¹ CMS, n. 2 above, Article III.5.

¹¹² See A. Trouwborst, n. 106 above, at 43–44.

¹¹³ CMS COP Resolution 7.2 on Impact Assessment and Migratory Species (24 September 2002), at paragraph 2.

¹¹⁴ CMS COP Resolution 10.3 on the Role of Ecological Networks in the Conservation of Migratory Species (25 November 2011), at paragraph 4.

¹¹⁵ CMS COP Resolution 10.19 on Migratory Species Conservation in the Light of Climate Change (25 November 2011), at paragraph 8(b). On the CMS and climate change generally, see A. Trouwborst, n. 94 above, 258.

¹¹⁶ CMS COP Resolution 10.11 on Power Lines and Migratory Birds (25 November 2011).

Of special relevance to border fences is Resolution 11.24 of 2014, establishing the Central Asian Mammals Initiative (CAMI).¹¹⁷ The CAMI is a so-called Special Species Initiative (SSI), a cooperative and flexible species conservation arrangement, involving both governmental and nongovernmental stakeholders, providing coordination between and building on pre-existing CMS instruments for Central Asian species.¹¹⁸ It covers 15 Central Asian species¹¹⁹ – 13 large herbivores and two large carnivores, not all of which are CMS-listed, occurring across 14 countries – many of which are vulnerable to the threats posed by border fences. The resolution recognizes that ‘fences can have a particularly detrimental impact on the conservation status of migratory mammals’, in particular through ‘direct mortality and fragmentation of habitats’ and by ‘disrupting essential movement from one place to another’.¹²⁰ Through Resolution 11.24, the COP adopted (i) a CAMI Programme of Work, (ii) a guidance document on linear infrastructure and (iii) a Single Species Action Plan for the argali sheep. All three expressly address border fences. Regarding the first, specifically with regard to Mongolian and goitred gazelle, Asiatic wild ass, Przewalski’s horse and Bactrian camel in the ‘Gobi Desert – Eastern Steppes Ecosystem’, the Programme of Work accords high priority to addressing the impacts of (border) fences through the following actions:

- (a) Map existing fences across the landscape in a spatial (GIS) database, including important meta-data,
- (b) mitigate impact of existing fences through removal or modification to wildlife-friendly designs,
- (c) strengthen EIA requirements so that fences that are required or proposed are assessed as to their necessity and if so, ensure that they are wildlife friendly and appropriate to all species affected. (i) Assess the legal framework which exists (joint ownership of railroads, border security policies). (ii) Create working group to assess best practice standards or take the lead in defining new ones, and
- (d) explore issues/options related to increasing border fence permeability.¹²¹

More detailed and technical guidance to implement these recommendations, and also to address impacts on other species, has been elaborated in the Guidelines for Addressing the Impact of Linear Infrastructure on Large Migratory Mammals in Central Asia, the second

document adopted through Resolution 11.24.¹²² The third is the International Single Species Action Plan for the Conservation of the Argali.¹²³ The threats posed to argali by border fences – mortality through entanglement, curbed mobility and increased poaching, as well as population fragmentation and genetic isolation – featured amongst the reasons for listing the argali sheep under the CMS in 2011, and are consequently also addressed in the Single Species Action Plan adopted in 2014.¹²⁴

Besides the CAMI, there is another SSI of potential relevance, which focuses on Sahelo-Saharan Megafauna and covers six of the aforementioned North-African ungulates.¹²⁵ These overarching SSIs should be distinguished from the array of subsidiary instruments which have been adopted under Article IV of the Convention. Presently, these comprise seven treaties and 19 non-binding Memoranda of Understanding (MoU), with each instrument tailored to the conservation needs of a particular (sub)species or species group. Several of these instruments are, or may become, relevant to the border fence issue. These include the Gorilla Agreement, which has a strong emphasis on connectivity conservation;¹²⁶ the Saiga Antelope MoU;¹²⁷ Bukhara Deer MoU;¹²⁸ West African Elephants MoU;¹²⁹ and South Andean Huemul MoU.¹³⁰

For reasons of space, the relevance of only one of these is concisely illustrated here, namely the Saiga Antelope MoU. The MoU itself expresses the concern that ‘obstacles preventing natural dispersion and migration’ adversely affect the saiga’s conservation status.¹³¹ Since the MoU’s adoption, the signatories have devoted express attention to the impact of border fences on saiga antelope, resulting *inter alia* in the development of detailed technical guidance to abate the adverse

¹¹⁷ CMS COP Resolution 11.24 on the Central Asian Mammals Initiative (9 November 2014).

¹¹⁸ See <<http://www.cms.int/cami>>.

¹¹⁹ Wild yak; Mongolian gazelle; goitred gazelle (*Gazella subgutturosa*); chinkara (*Gazella bennettii*); Tibetan gazelle (*Procapra picticaudata*); Tibetan antelope (*Pantholops hodgsonii*); saiga antelope; Bukhara deer; argali sheep; Bactrian camel; Asiatic wild ass; kiang (*Equus kiang*); Przewalski’s horse (*Equus caballus przewalskii*); snow leopard; cheetah.

¹²⁰ CMS COP Resolution 11.24, n. 117 above, at preamble.

¹²¹ Programme of Work for the Central Asian Mammals Initiative (2014), annexed to Resolution 11.24, n. 117 above, at paragraph 2.2.1.

¹²² Guidelines for Addressing the Impact of Linear Infrastructure on Large Migratory Mammals in Central Asia (UN Doc. UNEP/CMS/COP11/Doc.23.3.2, 18 September 2014), adopted through Resolution 11.24.

¹²³ International Single Species Action Plan for the Conservation of the Argali *Ovis ammon* (UN Doc. UNEP/CMS/COP11/Doc.23.3.3, 31 July 2014), adopted through Resolution 11.24.

¹²⁴ *Ibid.*, at 16–17, 30 and 34; T. Rosen, n. 22 above, at 20–21.

¹²⁵ See the Sahelo-Saharan Megafauna SSI website at <<http://www.cms.int/en/legalinstrument/sahelo-saharan-megafauna>>.

¹²⁶ See A. Trouwborst, n. 50 above, at 229–230.

¹²⁷ Memorandum of Understanding concerning Conservation, Restoration and Sustainable Use of the Saiga Antelope (*Saiga tatarica tatarica*) (Almaty, 24 September 2006; in force 24 September 2006) (‘Saiga Antelope MoU’).

¹²⁸ Memorandum of Understanding concerning Conservation and Restoration of the Bukhara Deer (*Cervus elaphus bactrianus*) (Dushanbe, 16 May 2002; in force 1 August 2002).

¹²⁹ Memorandum of Understanding concerning Conservation Measures for the West African Population of the African Elephant (*Loxodonta africana*) (22 November 2005; in force 22 November 2005).

¹³⁰ Memorandum of Understanding between the Argentine Republic and the Republic of Chile on the Conservation of the Southern Huemul (4 December 2010; in force 4 December 2010).

¹³¹ Saiga Antelope MoU, n. 127 above, at preamble.

consequences of the Kazakhstan/Uzbekistan border fence.¹³² Furthermore, the recently adopted International Work Programme for 2016–2020 urges the saiga range States to '[r]emove barriers impeding the movement of saiga antelopes or, if not possible, alter fences ... and other linear infrastructure to allow saigas to pass freely', under express reference to the aforementioned CMS Guidelines on linear infrastructure in Central Asia.¹³³ The Work Programme also urges the performance of EIA and SEA prior to the implementation of 'all infrastructure and other development likely to impact saigas'; the designation of 'trans-frontier protected areas where appropriate, in light of saiga distributions'; and the establishment of a 'network of ecological corridors in order to protect saiga populations during migration'.¹³⁴

BORDER FENCES AND THE EU HABITATS DIRECTIVE

In a book on the Habitats Directive published in 2015, one of the authors asserted that: 'In the European Union, most national borders are merely *virtual*. There are no man-made barriers within the EU, like walls or fences. And very often, the same habitat and the same species of fauna and flora can be found on both sides of the border'.¹³⁵

Within a very short time frame, the situation has changed. Nowadays, for instance, wolves, lynx, bears and deer intent on crossing the border between EU Member States Slovenia and Croatia are likely to run into a very real man-made barrier. Indeed, the main reason for singling out EU wildlife law for a closer look in this article, besides the elevated enforceability and other special features of the legislation itself,¹³⁶ is the special history of the initial disappearance of border barriers within Europe, followed by the unexpected recent surge of border fence creation along the external *and* internal borders of the Union. Over the past years, the EU has established an elaborate framework to ensure an

integrated management of its external borders – with a view to managing migration effectively and ensuring a high level of security – while safeguarding the free movement of persons within the Union.¹³⁷ A Regulation introduced in 2013 enabled the reintroduction by Member States of border controls at internal borders in exceptional circumstances, particularly when the Member State in question faces a serious threat to public policy or internal security.¹³⁸ The Regulation provides for various safeguards to ensure that this is only done as a last resort, and on a temporary basis.¹³⁹ In 2015, an extraordinary influx of refugees and other migrants led several Member States to reintroduce or reinforce border controls, including the rapid erection of hundreds of kilometres of border security fences on both the external and internal borders of the EU – without prior EIAs, let alone SEAs, regarding their design or placement.¹⁴⁰ Curiously, fences of whatever length or nature do not occur in the lists of projects for which an EIA is, or may be, required under the EU EIA Directive – even if these lists contain categories of linear infrastructure with potentially similar effects on wildlife, such as roads and railways.¹⁴¹ Under the EU SEA Directive, however, an SEA may be required, in particular when a 'plan' or 'programme' to construct one or more border fences 'has been determined to require an assessment pursuant to Article 6' of the Habitats Directive (see below).¹⁴²

Leaving aside the question to what degrees the construction of border fences complies with the aforementioned EU legal framework on borders, immigration and free movement, the analysis below exclusively addresses their compatibility with the Habitats Directive. The most relevant provisions from the Habitats Directive are (i) the duties in Article 6 to avoid and

¹³² See K.A. Olson, n. 32 above, recommending the removal of the fence's bottom two wires and the fastening of visible markers to the fence.

¹³³ Medium-Term International Work Programme for the Saiga Antelope (2016–2020) (UN Doc. UNEP/CMS/Saiga/MOS3/Report, Annex 5, 29 October 2015), at paragraph 6.1.

¹³⁴ *Ibid.*, at paragraphs 6.2, 7.2 and 7.3.

¹³⁵ A. Aragão, 'Transboundary Nature Conservation: Are There No Boundaries within the Natura 2000 Network?', in: C. Born *et al.* (eds.), *The Habitats Directive in its EU Environmental Law Context: European Nature's Best Hope?* (Routledge, 2015), 245, at 245 (emphasis in original).

¹³⁶ For reasons of space, these features of the Habitats Directive are not fleshed out any further here. For one recent discussion, see F. Fleurke and A. Trouwborst, 'European Regional Approaches to the Transboundary Conservation of Biodiversity: The Bern Convention and the EU Birds and Habitats Directives', in: L.J. Kotzé and T. Marauhn, n. 62 above, 128.

¹³⁷ Regulation 863/2007/EC of 11 July 2007 Establishing a Mechanism for the Creation of Rapid Border Intervention Teams, [2007] OJ L199/30; Regulation 1168/2011/EU of 25 October 2011 Amending Council Regulation (EC) No. 2007/2004 Establishing a European Agency for the Management of Operational Cooperation at the External Borders of the Member States of the European Union, [2011] OJ L304/1; Regulation 1051/2013/EU of 22 October 2013 Amending Regulation (EC) No. 562/2006 in Order to Provide for Common Rules on the Temporary Reintroduction of Border Control at Internal Borders in Exceptional Circumstances, [2013] OJ L295/1; Regulation 1052/2013/EU of 22 October 2013 Establishing the European Border Surveillance System (Eurosur), [2013] OJ L295/11; Regulation 1053/2013/EU of 7 October 2013 Establishing an Evaluation and Monitoring Mechanism to Verify the Application of the Schengen *Acquis*, [2013] OJ L295/27; Regulation 656/2014/EU of 15 May 2014 Establishing Rules for the Surveillance of the External Sea Borders in the Context of Operational Cooperation Coordinated by the European Agency for the Management of Operational Cooperation at the External Borders of the Member States of the European Union, [2014] OJ L189/93.

¹³⁸ Regulation 1051/2013/EU, n. 137 above.

¹³⁹ *Ibid.*, Articles 23 and 25.

¹⁴⁰ See J.D.C. Linnell *et al.*, n. 5 above.

¹⁴¹ Directive 2011/92/EU of 13 December 2011 on the Assessment of the Effects of Certain Public and Private Projects on the Environment, [2012] OJ L26/1, as last amended by Directive 2014/52/EU of 16 April 2014, [2014] OJ L124/1; see Article 4 and Annexes I and II.

¹⁴² Directive 2001/42/EC, n. 77 above, Article 3.

remedy harmful impacts on protected nature within 'special areas of conservation' (SAC) designated as part of the Natura 2000 network; and (ii) the rules in Article 12 concerning the killing and capture of strictly protected species. Both provisions are examined below.

The aforementioned razor wire fences installed along large tracts of the Slovenia/Croatia border, pursuant to a decision by the Slovenian government in November 2015 to fence off the entire 670-km border between the two countries, constitute an apposite scenario to bear in mind during this examination. As documented by Linnell *et al.*, some 350 km of this partly constructed and partly projected border fence cuts across 'some of the best preserved natural areas of the region', where it runs between a number of contiguous SACs on both sides of the border that are part of the Natura 2000 network and have been designated *inter alia* for wolf, lynx and brown bear.¹⁴³ Wolves and bears in this border area are part of interconnected populations which extend southeast into Greece and cover nine countries.¹⁴⁴ The fence threatens to cut the northwesternmost animals off from these Dinaric-Pindos wolf and bear populations. Once separated from the core population, biologists fear that Slovenian wolves would face rapid inbreeding, 'making viability of such a population fragment questionable'.¹⁴⁵ For lynx, the picture is bleaker still. Lynx in the region are part of the already vulnerable Dinaric population, shared between Slovenia, Croatia, and Bosnia and Herzegovina.¹⁴⁶ The Slovenian border fence 'may just be the last push for the population to spiral down the extinction vortex'.¹⁴⁷ Besides these impacts at the population level, animals may be individually affected. Large carnivores have large home ranges, and studies of GPS-tracked bears, wolves and lynx in Slovenia and Croatia have documented many cross-border journeys – prior to the arrival of the border fence, that is.¹⁴⁸ For instance, of the 10 or 11 wolf packs currently existing in Slovenia, five have (or had) dual nationalities, so to speak, with home ranges straddling the border with Croatia.¹⁴⁹ As regards direct mortality, the entanglement of wolves, bears or lynx in the fence's razor wire coils is clearly conceivable, just like the unfortunate deer mentioned above. At the time of writing, however, large carnivore casualties had not yet been recorded¹⁵⁰ (which as such is not surprising, given that they occur at much lower densities than deer).

Article 6.2 of the Habitats Directive requires Member States to take appropriate steps to avoid, in the SACs, the deterioration of species' habitats as well as 'disturbance of the species for which the areas have been designated, in so far as such disturbance could be significant in relation to the objectives of this Directive'. This obligation has repeatedly been interpreted by the Court of Justice of the EU (CJEU) as a requirement to 'do what it takes': what ultimately counts is the result.¹⁵¹ Besides, concrete plans or projects that are potentially harmful to the protected nature within SACs are subject to the stringent authorization scheme set out in Article 6.3–4 of the Directive:

3) Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. In light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.

4) If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature, the Member State shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted. Where the site hosts a priority habitat type and/or a priority species, the only considerations which may be raised are those relating to human health or public safety, to beneficial consequences of primary importance for the environment or, further to an opinion from the Commission, to other imperative reasons of overriding public interest.

According to the CJEU, the criterion from Article 6.3 implies that plans or projects may in principle be authorized only 'where no reasonable scientific doubt remains as to the absence' of adverse impacts.¹⁵² The prior assessment to determine this needs to contain 'complete, precise and definitive findings and conclusions capable of removing all reasonable doubt as to the effects of the work proposed'.¹⁵³ If there is no such certainty that significant adverse impacts will not occur, only Article 6.4 can offer a way out for the authorities seeking to go ahead with a project anyway. Notably, both Articles 6.2 and 6.3 can require addressing developments taking place *outside* of an SAC if those

¹⁴³ See J.D.C. Linnell *et al.*, n. 5 above, Box 1.

¹⁴⁴ P. Kaczensky *et al.*, *Status, Management and Distribution of Large Carnivores – Bear, Lynx, Wolf and Wolverine – in Europe* (European Commission, 2013); G. Chapron *et al.*, 'Recovery of Large Carnivores in Europe's Modern Human-Dominated Landscapes', 346:6216 *Science* (2014), 1517.

¹⁴⁵ See J.D.C. Linnell *et al.*, n. 5 above, Box 1.

¹⁴⁶ See P. Kaczensky *et al.*, n. 144 above; G. Chapron *et al.*, n. 144 above.

¹⁴⁷ See J.D.C. Linnell *et al.*, n. 5 above, Box 1.

¹⁴⁸ *Ibid.*

¹⁴⁹ *Ibid.*

¹⁵⁰ Personal communication with S. Reljic, n. 45 above.

¹⁵¹ For a clear example, see CJEU, Case C-117/00, *Commission v. Ireland*, [2002] ECR I-5335, at paragraphs 26–33.

¹⁵² CJEU, Case C-127/02, *Waddenvereniging*, [2004] ECR I-7405, at paragraph 61.

¹⁵³ CJEU, Case C-404/09, *Commission v. Spain*, [2011] ECR I-11853.

developments threaten the species *within* the SAC.¹⁵⁴ It should also be noted that both wolf and brown bear are marked as priority species in Annex II of the Directive.

Article 12.1, which as a matter of principle applies both within and beyond SACs, commits Member States to taking ‘the requisite measures to establish a system of strict protection’ for the animal species listed in Appendix IV of the Directive – including the three aforementioned large carnivores.¹⁵⁵ This requires the establishment and enforcement of prohibitions on, *inter alia*, ‘all forms of deliberate capture or killing’ and ‘deliberate disturbance’ of individual animals. Importantly, the term ‘deliberate’ in the sense of this provision covers not only actual intent, but also the acceptance of reasonably foreseeable results.¹⁵⁶ For instance, in the words of the CJEU, for capture or killing to be ‘deliberate’ – and thus covered by the prohibition of Article 12.1 – it is sufficient that the author of the act concerned ‘accepted the possibility of such capture or killing’.¹⁵⁷ Furthermore, the Court has emphasized that Member States must not merely prohibit the acts enumerated in Article 12, but also take all measures necessary to ensure that the prohibitions in question are not violated in practice.¹⁵⁸ Likewise, Article 12.1 ‘requires the Member States not only to adopt a comprehensive legislative framework but also to implement concrete and specific protection measures’.¹⁵⁹ A particular duty to monitor ‘incidental capture and killing’ of Annex IV animals is laid down in Article 12.4. Member States are to take the conservation measures necessary to ensure that such killing does not have a ‘significant negative impact’ on the species involved.¹⁶⁰ Member States may derogate from the obligations of Article 12 only provided that: (i) ‘there is no satisfactory alternative’; (ii) ‘the derogation is not detrimental to the maintenance of the populations of the species concerned at a favourable conservation status in their natural range’; and (iii) the derogation is needed for one of the purposes listed in Article 16. These include ‘public safety’ and the open-ended category of ‘other imperative reasons

of overriding public interest, including those of a social or economic nature’.¹⁶¹

In light of the above, the implications of Articles 6 and 12 for border fences such as the Slovenian one are obvious. Indeed, in its case law regarding the Habitats Directive, the CJEU has already highlighted the importance of ensuring adequate population connectivity and avoiding habitat fragmentation, notably in two judgments involving large carnivores. A 2010 judgment affirms that linear infrastructure – in that case a road – ‘may constitute a real barrier for certain species referred to in the Habitats Directive’ – in that case the Iberian lynx (*Lynx pardinus*) – ‘and, by thus fragmenting their natural range, promote endogamy and genetic drift within those species’.¹⁶² The second judgment, of 2011, concerned brown bears and capercaillies (*Tetrao urogallus*) threatened by open-cast coal mining activities in a Spanish SAC.¹⁶³ These operations affected an ecological corridor connecting two bear subpopulations. A report is cited establishing that the noise and vibrations caused by the mining operations ‘will prevent access for the brown bear to that corridor, or make it much more difficult’.¹⁶⁴ The Court qualifies these impacts as ‘disturbances’ of the Natura 2000 site ‘which are significant having regard to the conservation of the brown bear’, thus amounting to a violation of Article 6.2 of the Habitats Directive.¹⁶⁵ Comparable conclusions are reached in respect of the capercaillie, as the mining operations are deemed ‘capable of producing a barrier effect likely to contribute to the fragmentation of the habitat of the capercaillie and the isolation of certain sub-populations of that species’,¹⁶⁶ one of which is located *outside* the SAC. As the Court observes:

there is a risk that operations currently being carried out, in conjunction with projects the implementation of which is imminent, form a continuous east–west barrier for the capercaillie, capable of leading to the isolation of population pockets of that species, and, over time, to the disappearance of pockets located to the south of that barrier.¹⁶⁷

In the words of Verschuuren, ‘the conclusion cannot be other than that destroying a corridor that leads to the deterioration of a site is prohibited by Article 6(2)’.¹⁶⁸

For border fences, the preceding analysis demonstrates that the maintenance of an existing fence or the construction of a new one may, depending on the circumstances, constitute a violation of Article 6 and/or Article

¹⁵⁴ CJEU, Case C-96/98, *Commission v. France*, [1999] ECR I-8531; European Commission, *Managing Natura 2000 Sites: The Provisions of Article 6 of the ‘Habitats’ Directive* (2000), at 24; A. Trouwborst, n. 50 above, at 242.

¹⁵⁵ Directive 92/43/EEC, n. 3 above, Articles 12.1 and 13.1; note that in some (parts of) Member States, the more flexible Annex V status may apply instead.

¹⁵⁶ CJEU, Case C-103/00, *Commission v. Greece*, [2002] ECR I-1147, at paragraph 36; CJEU, Case C-221/04, *Commission v. Spain*, [2006] ECR I-4515, at paragraph 71; see also H. Schoukens and K. Bastmeijer, ‘Species Protection in the European Union: How Strict is Strict?’, in: C. Born *et al.*, n. 135 above, 121, at 138–139.

¹⁵⁷ Case C-221/04, n. 156 above.

¹⁵⁸ *Ibid.*; Case C-103/00, n. 156 above; CJEU, Case C-518/04, *Commission v. Greece*, [2006] ECR I-42.

¹⁵⁹ CJEU, Case C-183/05, *Commission v. Ireland*, [2007] ECR I-137, at paragraph 29.

¹⁶⁰ Directive 92/43/EEC, n. 3 above, Article 12.4.

¹⁶¹ *Ibid.*, Article 16.1(c).

¹⁶² CJEU, Case C-308/08, *Commission v. Spain*, [2010] ECR I-4281, at paragraph 25.

¹⁶³ Case C-404/09, n. 153 above.

¹⁶⁴ *Ibid.*, at paragraph 188.

¹⁶⁵ *Ibid.*, at paragraph 191.

¹⁶⁶ *Ibid.*, at paragraph 148.

¹⁶⁷ *Ibid.*, at paragraph 147.

¹⁶⁸ J.M. Verschuuren, ‘Connectivity: Is Natura 2000 Only an Ecological Network on Paper?’, in: C. Born *et al.*, n. 135 above, 285, at 298.

12 of the Directive. Regarding Article 6.2, a border fence may produce deterioration or disturbance in parallel to the Spanish bear and capercaillie case, amounting to a violation of the Directive. Regarding Article 6.3–4, it is evident that a border fence can qualify as a ‘plan or project’.¹⁶⁹ Whether the construction of a border fence infringes on Article 6.3–4, however, depends on a range of factors. These may include whether the potential wildlife consequences of the fence were contemplated in advance of its construction; what those consequences are; whether any underpasses or other wildlife corridors in the fence qualify as mitigation or compensation;¹⁷⁰ whether the purpose of the fence can be said to be ‘public safety’, or another ‘imperative reason of overriding public interest’; whether alternative solutions have been proven absent; whether ‘all compensatory measures necessary’ have been taken;¹⁷¹ and whether soliciting an ‘opinion’ from the Commission was required and, if so, whether it was sought.¹⁷² Needless to say, a crucial factor would be whether the procedure of Article 6.3–4 was followed at all. If only for the latter reason, it would seem that Article 6 of the Habitats Directive has been violated on more than one occasion through the hasty erection of border fences potentially affecting SACs in various EU Member States. Regarding Article 12, whether a particular border fence is at odds with this provision would again depend on the circumstances. Pertinent factors include whether it is reasonably foreseeable that the fence may entangle Annex IV animals, resulting in ‘capture or killing’; whether any other anticipated impacts may be qualified as ‘disturbance’ in the sense of Article 12; whether, accordingly, in light of the available information the decision to construct the fence can be considered as ‘accepting the possibility’ of such capture, killing and/or disturbance; and, if so, whether the three cumulative conditions of Article 16 have been met, so as to justify a derogation.

It should be stressed that the Habitats Directive, unlike some of the legal instruments discussed above and unlike the EU EIA and SEA Directives,¹⁷³ does not contain any safeguard clause concerning emergency measures. Likewise, regarding general defences that have been invoked by Member States in the past to justify non-compliance with EU obligations – such as *force majeure* or other equivalents of the circumstances precluding wrongfulness that apply under general international law – the CJEU has so far been extremely reluctant to let Member States off the hook.¹⁷⁴ Thus, it seems that in order to comply with their obligations under EU law, Member States must follow and abide by the procedure of Article 6.3–4 of the Habitats Directive for *all* projects, no matter how urgent, that are potentially harmful to wildlife within Natura 2000 sites – including border fences. Similar considerations apply to the generic strict protection of Annex IV wildlife, where Article 16 is the sole basis for derogations from the prohibitions of Article 12. Interestingly, in December 2015 the Croatian government sent a letter to the European Commission, alleging that the erection by Slovenia of razor wire fences along the Croatian border represents a ‘clear breach of the Habitats Directive’, and requesting the Commission to ‘discharge its duties as the “Guardian of the Treaties” and take swift action to ensure effective implementation of EU nature conservation legislation’.¹⁷⁵ The above analysis appears to support the position taken by the Croatian authorities.

Before concluding, it is appropriate to highlight another implication of border fences for the implementation of the Habitats Directive concerning large carnivores. This concerns the scale at which Member States are expected to achieve and maintain a favourable conservation status (FCS) for species covered by the Directive, and may be illustrated with reference to the somewhat enigmatic condition from Article 16 that a derogation from strict protection may only be allowed if it is ‘not detrimental to the maintenance of the populations of the species

¹⁶⁹ Whereas the Habitats Directive does not define these terms, for the term ‘project’ an analogy may be sought with the EIA Directive, Article 1.2(a) of which defines a ‘project’ as ‘the execution of construction works or of other installations or schemes’ and ‘other interventions in the natural surroundings and landscape’; Directive 2011/92/EU, n. 141 above, Article 1.2(a); see also European Commission, n. 154 above, at 31.

¹⁷⁰ See CJEU, Case 521/12, *T.C. Briels et al. v. Minister van Infrastructuur en Milieu* (15 May 2014), not yet reported; and H. Schoukens, ‘Habitat Restoration Measures as Facilitator for Economic Development within the Context of the EU Habitats Directive: Beyond the Regulatory Deadlock or a Road to Nowhere?’, 28 *Journal of Environmental Law* (2016, forthcoming).

¹⁷¹ On this complicated condition, see D. McGilivray, ‘Compensatory Measures under Article 6(4): No Net Less for Natura 2000?’, in: C. Born et al., n. 135 above, 101.

¹⁷² Regarding such opinions, the European Commission appears to employ more lenient standards in assessing derogations than the CJEU. At the time of writing, 20 opinions had been issued by the Commission, accepting the derogations involved in all cases but one. For a critical review, see L. Krämer, ‘The European Commission’s Opinions under Article 6(4) of the Habitats Directive’, 21:1 *Journal of Environmental Law* (2009), 59.

¹⁷³ According to Article 1.3 of the EIA Directive (Directive 2011/92/EU, n. 141 above), ‘Member States may decide, on a case-by-case basis and if so provided under national law, not to apply this Directive to projects, or parts of projects, having defence as their sole purpose, or to projects having the response to civil emergencies as their sole purpose, if they deem that such application would have an adverse effect on those purposes’; whereas according to Article 2.4, ‘Member States may, in exceptional cases, exempt a specific project from the provisions laid down in this Directive, where the application of those provisions would result in adversely affecting the purpose of the project, provided the objectives of this Directive are met.’ According to Article 3.8 of the SEA Directive (Directive 2001/42/EC, n. 77 above), ‘plans and programmes the sole purpose of which is to serve national defence or civil emergency’ are ‘not subject to this Directive’.

¹⁷⁴ See, e.g., CJEU, Case C-280/83, *Commission v. Italy*, [1070] ECR I-93 (in which Italy unsuccessfully pleaded that a bomb explosion had made compliance difficult).

¹⁷⁵ Ministry of Foreign and European Affairs of the Republic of Croatia, ‘Press Release: Croatia Expects European Commission’s Help over Slovenia’s Razor Wire Fence’ (17 December 2015), found at: <<http://www.mvep.hr/en/info-servis/press-releases/25615.html>>.

concerned at a favourable conservation status in their natural range'.¹⁷⁶ In the absence of unambiguous case law from the CJEU, the appropriate scale for assessing whether this condition is fulfilled remains the subject of debate.¹⁷⁷ According to a quite broadly supported interpretation, however, for wide-ranging species like large carnivores whose populations extend across international borders, the appropriate benchmark is the transboundary population – on condition that a transboundary population-level management plan or similar safeguard is in place.¹⁷⁸ If, however, a border fence effectively cuts off one part of a population from the other, then to all intents and purposes the former transboundary population ceases to exist. For each Member State involved, the FCS benchmark would then revert to being the population segment on its own side of the fence, resulting in more onerous and potentially unworkable requirements – especially bearing in mind that some countries may be too small to harbour a viable population of wolves, bears or lynx by themselves.¹⁷⁹

CONCLUSIONS AND RECOMMENDATIONS

If the analysis above demonstrates one thing, it is that the issues raised by border fences deserve serious attention from policy and decision makers, conservationists, researchers and other stakeholders in the field of (inter)national wildlife law and policy. These fences, as Linnell *et al.* observe, have the potential to 'undo decades of conservation and international collaboration efforts', and their proliferation entails a need to 'realign our conservation paradigms with the political reality on the ground'.¹⁸⁰ This realignment and the evident need to keep the adverse impacts of border fences on wildlife to a minimum, seem to imply that the role reserved for international cooperation and international law is becoming greater rather than smaller.

As outlined above, many already existing obligations in international legal instruments have a bearing on

border fences as they relate to wildlife, even if they do not specifically address the fences in so many words. At the same time, there is apparent room for improvement regarding the contribution of said instruments to preventing and ameliorating the harmful impacts of border fences on wildlife around the world. Apart from raising awareness concerning the existence and potential of these instruments and obligations, much could be gained through the further clarification and interpretation of their implications for border fences, including through the elaboration of authoritative guidance expressly addressing the issue. The development and adoption of a CBD COP Decision, CMS COP Resolution and/or Bern Convention Standing Committee Recommendation expressly addressing border fences would appear to constitute particularly promising avenues to take this forward. Similar considerations apply to the adoption of guidance within the various other legal frameworks discussed above. Such decisions could usefully build on the CMS guidance already developed for Central Asia and the aforementioned mitigation measures proposed in the scientific literature.

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¹⁷⁶ Directive 92/43/EEC, n. 3 above, Article 16.1.

¹⁷⁷ See, e.g., A. Trouwborst, 'Living with Success – And with Wolves: Addressing the Legal Issues Raised by the Unexpected Homecoming of a Controversial Carnivore', 23:3 *European Energy and Environmental Law Review* (2014), 89, at 96–97; Y. Epstein, 'Favourable Conservation Status for Species: Examining the Habitats Directive's Key Concept through a Case Study of the Swedish Wolf', 28:2 *Journal of Environmental Law* (2016), 221.

¹⁷⁸ See, *inter alia*, European Commission, *Guidance Document on the Strict Protection of Animal Species of Community Interest under the Habitats Directive 92/43/EEC* (European Commission, 2007), at paragraph 46; J.D.C. Linnell *et al.*, n. 64 above; A. Trouwborst, n. 177 above; but see also Y. Epstein, n. 177 above, 241–243.

¹⁷⁹ See J.D.C. Linnell *et al.*, n. 64 above; J.D.C. Linnell and L. Boitani, n. 65 above, at 80.

¹⁸⁰ See J.D.C. Linnell *et al.*, n. 5 above.